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Outcome of patients with cirrhosis admitted to intensive care unit

Prognóstico do paciente cirrótico admitido na terapia intensiva

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ABSTRACT

Objective: This study aimed to evaluate the outcome of cirrhotic patients admitted to Intensive Care Unit.

Methods: We conducted a prospective cohort of cirrhotic patients admitted to two intensive care unit between June 1999 to September 2004. We collected demographic, comorbid conditions, diagnosis, vital signs, laboratory data, prognostic scores and evolution in intensive care unit and hospital. The patients were divided in groups: non surgical, non liver surgery, surgery for portal hypertension, liver surgery, liver transplantation, and urgent surgery.

Results: We studied 304 patients, which 190 (62.5%) were male. The median of age was 54 (47-61) years. The mortality rate in intensive care unit and hospital were 29.3 and 39.8%, respectively, more elevated than in the other patients admitted critically ill patients (19.6 and 28.3%; p<0.001). Non surgical patients and those submitted to urgent surgery presented high mortality rate in the intensive care unit (64.3 and 65.4%) and in the hospital (80.4 and 76.9%). The variables related to hospital mortality were [Odds ratio (confidence interval 95%)]: mean arterial pressure [0.985 (0.974-0.997)]; mechanical ventilation in the first 24 h [4.080 (1.990-8.364)]; confirmed infection in the first 24 h [7.899 (2.814-22.175)]; acute renal failure [5.509 (1.708-17.766)] and APACHE II score (points) [1.078 (1.017-1.143)].

Conclusions: Cirrhotic patients had higher mortality rate compared to non cirrhotic critically ill patients. Those admitted after urgent surgery and non surgical had higher mortality rate.

Keywords: Acute disease; Incidence; Intensive care units; Liver cirrhosis/complications; Liver cirrhosis/mortality; Prognosis; Treatment outcome

INTRODUCTION

It has been known for many years that liver cirrhosis patients have poor intensive care unit prognosis.[1] Liver cirrhosis patients are functionally immunosuppressed, and prone to infection.[2] This is a frequent triggering factor for organ dysfunction, including hepatic encephalopathy, renal failure and shock.[3,4] Thus, more recent studies have described the need of stratifying these patients, as some do not benefit from intensive care admission (which could be considered futile), while others can have better outcomes.[5] It should then be evaluated the liver dysfunction stage, its manifestations (encephalopathy, digestive hemorrhage, etc.) and number of organ dysfunctions featured (specially dialysis dependent renal failure) and severe infection, planned (or not) liver transplantation or other surgery, specially

in trauma patients.

This study aimed to evaluate the outcomes for cirrhotic patients admitted to intensive care units of two public hospitals in the city of Rio de Janeiro.

METHODS

We conducted a prospective cohort study of the liver cirrhosis patients consecutively admitted to the Intensive Care Units (ICUs) of the University Hospitals Clementino Fraga Filho (HUCFF) and Hospital I of Instituto Nacional do Câncer (HI-INCA), both in the city of Rio de Janeiro. Liver cirrhosis was diagnosed by conventional methods (history, physical examination, ultra-sound, computed tomography, liver biopsy or surgery with direct visual evaluation) as recorded in the patient's file by the time of data collection. Patients below 18 years-old, pregnant and readmitted were excluded.

The study period was from June 1999 to September 2004. Both ICUs had, by the study time, 10 beds for clinical and surgical patients, being able to provide invasive monitoring, mechanic ventilation, and hemodialysis for all beds. However, only the HUCFF had an active liver transplant program. Were collected demographics, comorbidities, acute diseases, cause for admission, type of admission, first 24 ICU hours vital signs, laboratory tests (blood count, blood chemistry, arterial gasometry), overall prognostic scores Acute Physiology and Chronic Health Evaluation II (APACHE II), Simplified Acute Physiologic Score II (SAPS II), Mortality Prediction Model II (MPM II), and organ dysfunction scores Logistic Organ Dysfunction Score (LODS), Multiple Organ Dysfunction Score (MODS), and Sequential Organ Failure Assessment (SOFA). The ICU and hospital outcomes were also recorded. No intervention was involved, being this a totally observational study. The data were collected with a standardized formulary, and uploaded in an electronic sheet for analysis purposes.

For statistical analysis, the SigmaPlot 11 for Windows software (Systat Software Inc.) was used. Binary variables (yes/no) were treated as proportions and analyzed by the Chi-square test. Normal distribution continuous variables were presented as means and analyzed with the t-Student test. For multiple comparisons the One Way Analysis of Variance test was used. The post-hoc test was performed with the Holm-Sidak method. When a variable had no normal distribution (most of them), medians (25%-75%) were calculated, and interpreted with the Mann-Whitney Rank Sum test. For multiple comparisons the Kruskal-Wallis One Way Analysis of Variance on Raks test was used. In this case, the post-hoc test was with the Dunn method. For determination of factors associated with ICU and hospital mortality, we used the binary logistic regression (stepwise forward). The overall model calibration was evaluated with the Hosmer-Lemeshow Goodness-of-fit statistics. In all cases a P values < 0.05 were considered significant.

This study used the previous prognostic scores study data bank, already approved by the local Ethics Committees, with no informed consent signature needed.

RESULTS

During the trial period, 4,922 patients were admitted. Three hundred and four (304) cirrhotic patients were studied, being 190 (62.5%) male. The cirrhotic patients' mean age was lower that for other admitted patients (cirrhotic = 54 (47-61) years versus non-cirrhotic 57 (43-69) years, P<0.001). Overall ICU and hospital mortality was higher in liver cirrhosis patients: ICU – cirrhosis = 89/304, 29.3% versus non-cirrhosis = 906/4,618, 19.6%; P <0.001; hospital – cirrhosis = 121/304, 39.8% versus non-cirrhosis = 1,309/4,618, 28.3%, P <0.001.

The patients were grouped according to their cause for ICU admission. Thus, the patients were divided in: a) non-surgical (n=56); b) non-liver surgeries (n=32); c) portal hypertension surgery (n=23); d) liver surgery (n=20); e) liver transplantation (n=147) and f) urgent surgeries (n=26). The Table 1 shows the demographics, comorbidities and acute diagnosis variables. It was identified that patients undergoing non-liver surgery were older than those undergoing liver transplantation. The subjects undergoing elective surgeries (liver, non-liver and for portal hypertension) had increased systemic hypertension prevalence. Patients undergoing non-liver surgeries had increased comorbidities, such as congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), and ischemic heart disease. Non-surgical patients and those undergoing urgent surgery had increased prevalence of acute renal failure, upper digestive hemorrhage, confirmed infection by 24 hours after admission, mechanic ventilation by 24 hours after admission, while only non-surgical patients had more coma by the admission and after 24 hours in ICU, admission pneu-

monia, and admission systolic blood pressure (SBP) < 90 mmHg. Coma was defined as Glasgow coma scale < 8 points. Non-surgical patients, liver transplant patients and those undergoing urgent surgery had increased liver failure prevalence.

The Table 2 shows the vital signs and laboratory tests. A significant difference was seen a) in non-surgical patients with lower Glasgow scale, increased creatinine, BUN, bilirubin, and lower bicarbonate and PaO_2/FiO_2 rate; b) in transplanted patients with thrombocytopenia, decreased prothrombin activity and increased blood glucose; c) in non-surgical patients and in urgent surgery patients, decreased diuresis, lower hematocrit and increased leucocytes counts, while only this last group had lower albumin levels.

The Table 3 shows the prognostic and multiple organ dysfunction scores and patients' outcomes. The general prognostic and multiple organ dysfunction scores were higher in non-surgical patients and in those undergoing urgent surgery, as well as for ICU and hospital mortality. Non-surgical patients stayed longer in the ICU. However, no differences in hospital stay were found for the several groups.

The ICU (Table 4) and hospital (Table 5) outcome-associated factors were determined by logistic regression. In both models, acute renal failure, mechanic ventilation, APACHE II score and mean blood pressure (MBP) were outcome-associated variables. The hospital model had one additional variable: confirmed infection within the first 24 hours of ICU admission.

Table 1 – Comparison of demographics, comorbidities and acute diagnosis data between the several cirrhotic patients groups

Type	Non-surgery (N=56)	Non-liver surgery (N=32)	Portal hypertension surgery (N=23)	Liver surgery (N=20)	Liver transplant (N=147)	Urgent surgery (N=26)	P value
Age (years)	53 (58-61)	61 (52-69)a	53 (47-60)	58 (48-62)	53 (45-59)a	59 (53-65)	0.003
Male	38 (67.9)	20 (62.5)	11 (47.8)	13 (65)	97 (66)	11 (42.3)	0.149
Comorbidities							
SAH	8 (14.3)	14 (43.8)	8 (34.8)	8 (40)	11 (7.5)	3 (11.5)	<0.001
Diabetes mellitus	7 (12.5)	5 (15.6)	6 (26.1)	3 (15)	19 (12.9)	4 (15.4)	0.696
Ischemic heart disease	2 (3.6)	5 (15.6)	0 (0)	1 (5)	2 (1.4)	0 (0)	0.002
Liver failure	41 (73.2)	5 (15.6)	10 (43.5)	0 (0)	110 (74.8)	16 (61.5)	<0.001
CRF	2 (3.6)	2 (6.3)	0 (0)	0 (0)	1 (0.7)	0 (0)	0.187
CHF	1 (1.8)	3 (9.4)	0 (0)	0 (0)	1 (0.7)	3 (11.5)	0.004
COPD	3 (5.4)	7 (21.9)	1 (4.3)	1 (5)	2 (1.4)	1 (3.8)	<0.001
AIDS	2 (3.6)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3.8)	0.145
Acute diagnosis							
ARF	25 (44.6)	3 (9.4)	2 (8.7)	0 (0)	12 (8.2)	6 (23.1)	<0.001
Heart arrhythmia	3 (5.4)	0 (0)	2 (8.7)	0 (0)	1 (0.7)	0 (0)	0.042
UDH	25 (44.6)	0 (0)	2 (8.7)	0 (0)	1 (0.7)	4 (15.4)	<0.001
Admission Coma	9 (16.1)	1 (3.1)	1 (4.3)	0 (0)	5 (3.4)	0 (0)	0.004
SBP < 90 mmHg	12 (21.4)	3 (9.4)	3 (13)	1 (5)	6 (4.1)	4 (15.4)	0.007
Admission pneumonia	16 (28.6)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3.8)	<0.001
Confirmed 24 hr infection	35 (62.5)	2 (6.3)	0 (0)	1 (5)	3 (2)	17 (65.4)	<0.001
24 h Mechanic ventilation	32 (57.1)	5 (15.6)	2 (8.7)	0 (0)	30 (20.4)	11 (42.3)	<0.001
Coma by24 h	10 (17.9)	2 (6.3)	1 (4.3)	0 (0)	5 (3.4)	1 (3.8)	0.005
Jaundice	29 (51.8)	8 (25)	2 (8.7)	1 (5)	58 (39.5)	9 (34.6)	<0.001

Results expressed as median (25%-75%) or number (%). The pair noted with the letter a (age) showed statistically significant difference ($P<0.05$) on post-hoc test. SAH – systemic arterial hypertension; CRF – chronic renal failure; CHF – congestive heart failure; COPD – chronic obstructive pulmonary disease; AIDS – acquired immunodeficiency syndrome; ARF – acute renal failure; UDH – upper digestive hemorrhage; SBP – systolic blood pressure.

Table 2 – Comparison of vital signs and laboratory tests values between the several cirrhotic patients' groups

Type	Non-surgical (N=56)	Non-liver surgery (N=32)	Portal hypertension surgery (N=23)	Liver surgery (N=20)	Liver transplant (N=147)	Urgency surgery (N=26)	P value
MBP (mmHg)	70 (55.3-95.2)	70.3 (56.7-96.7)	68 (58.75-103.4)	77.7 (69.7-100.5)	82 (62-114.5)	61 (52.3-80.7)	0.017
HR (bpm)	105 (62-130)c	68 (63-104)a	68 (55-97)b,c	98 (65-116)	113 (100-127)a,b	106 (75-120)	<0.001
RR (irpm)	26 (21.5-30)	22 (20-24)	22 (20-24)	22 (20-24)	24 (21-28)	24 (21-28)	0.021
Axillar temperature (°C)	35.5 (35-36.5)	35.4 (35-36.2)b	36 (35-37.2)	35.7 (35-36.7)	36.7 (35-37.5)a,b	35.1 (35-35.8)a	<0.001
Diuresis/24 h (mL)	1161 (438-1850)	1300 (686-1748)	1631 (1200-2800)	1870 (1500-2273)	1640 (1106-2469)	1170 (733-1710)	<0.001
Glasgow score	13.5 (6-15)a,b,c	15 (15-15)c	15 (15-15)b	15 (15-15)a	15 (15-15)	15 (15-15)	<0.001
Hematocrit (%)	27 ± 7.1c.e	29.3 ± 7.5	32.2 ± 5.6c.d	33.4 ± 8.4e.b.a	28.4 ± 6.2 a	26.1 ± 7.3b.d	<0.001
Leucocytes (x10^3/mm^3)	11.1 (6.9-18.2)b	9.6 (4.7-13.9)	9.6 (4.9-11.7)	9.5 (7.6-13.6)	8.0 (5.2-12.0)a,b	13.0 (8.3-20.2)a	0.002
Platelets (x10^3/mm^3)	67 (44.25-99.25)	94 (74-192)a	80 (40.5-105.5)c	81 (58-176.75)b	31 (20-48)a,b,c	89.5 (43-129)	<0.001
PTA (%)	39 (25-52)	58 (38-76)c	54 (40-69)a	57 (42-70)b	25 (16-34)a,b,c	36 (27-44)	<0.001
Glucose (mg/dl)	123 (76-150)a	124 (101-145)b	116 (99-190)c	148 (104-233)e	244 (187-307)a,b,c,d,e	130 (113-185)d	<0.001
Urea (mg/dl)	81 (51-143)a,b,c,a	38 (29-52)b	41 (25-77)c	27 (20-41)a.e	39 (30-61)d	66 (43-93)e	<0.001
Creatinine (mg/dl)	1.6 (1.0-2.9)a,b,c,d	1.05 (0.72-1.35)c	1.0 (0.62-1.57)b	1.0 (0.8-1.1)a	1.1 (0.9-1.5)d	1.7 (0.7-2.5)	<0.001
Sodium (mEq/L)	135 (131-140)d	135 (132-139)c	137 (132-140)	135 (132-140)a	141 (137-146)a,b,c,d	135 (130-139)b	<0.001
Potassium (mEq/L)	4.6 (3.7-5.4)	4.3 (4.1-5.2)	4.3 (3.7-4.7)	4 (3.9-4.6)	4.3 (3.8-4.8)	5.0 (3.7-5.7)	0.119
Albumin (g/dL)	2.2 (1.6-2.8)	2.6 (1.6-3.2)	2.9 (2.4-3.1)a	2.0 (1.8-2.4)	2.2 (1.8-2.6)	1.6 (1.4-2.2)a	0.013
Bilirubin (mg/dL)	5.8 (1.7-14.1)a,b	3.0 (2.0-5.9)	2.2 (1.0-2.8)b	0.8 (0.7-2.2)a	2.9 (1.7-4.6)	3.0 (2.3-5.6)	0.002
pH	7.30 (7.12-7.42)	7.32 (7.26-7.38)	7.34 (7.28-7.42)	7.33 (7.29-7.37)	7.32 (7.27-7.39)	7.27 (7.15-7.36)	0.222
$PaCO_2$ (mmHg)	30 (24.8-41.6)	36.7 (32.8-39.1)	37.0 (34.8-42.8)	37.6 (35.9-46.4)	35.8 (32.0-41.1)	35.4 (30.0-43.6)	0.025
HCO_3 (mEq/L)	16.5 (10.9-20.9)a	19.1 (16-21.9)	21.0 (18.7-23.2)a	21.3 (17.0-24.3)	19.0 (16.0-21.8)	15.8 (12.2-22.6)	0.003
PaO_2/FiO_2	241 (121-397)a,b,c	387 (253-519)c	416 (312-487)b	390 (338-464)a	316 (250-418)	284 (210-371)	<0.001

Results expressed as median (25%-75%) or number (%). The pairs noted with the letters a, b, c, d and e showed statistically significant differences in the post-hoc analysis; MBP – mean blood pressure; HR – heart rate; RR – respiratory rate; PTA – prothrombin time and activity.

Table 3 - Prognostic and multiple organ dysfunction scores values and patient's outcome between the several cirrhotic patients' groups

Type	Non-surgical (N=56)	Non-liver surgery (N=32)	Portal hypertension surgery (N=23)	Liver surgery (N=20)	Liver transplant (N=147)	Urgent surgery (N=26)	P value
APACHE II (%)	46 (29-77)e,f,g,h	8.5 (5.2-14.2)c,g	8.5 (4.9-13.5)a,e	9.1 (5.7-12.6)d,h	8.5 (4.9-14.3)b,f	61.1 (44.4-78.4)a,b,c,d	<0.001
SAPS II (%)	55 (19-84)a,b,c,d	6.4 (3.1-18.1)d,h	4.7 (1.8-9.2)b,f	2.3 (1.3-5.6)a,e	6.5 (2.6-17.7)c,g	37.1 (24.7-71.8)e,f,g,h	<0.001
LODS (%)	38 (21-83)a,b,c,d	12.7 (4.8-21.1)c	10.4 (4.8-15)b	4.8 (3.2-7.1)a,e,f	10.4 (4.8-21.1)d,f	21 (10.4-48.4)e	<0.001
MPM $II_{24\,h}$ (%)	50 (28-70)a,b,c,d	8.0 (5.6-17.1)d,h	5.6 (4.5-8.1)b,f	4.9 (3.9-8.1)a,e	6.9 (4.8-13.7)c,g	31.2 (18.7-65.7)e,f,g,h	<0.001
MODS (points)	8 (6-12)a,b,c	3 (1-4.5)c,f,i	3 (2-4)b,e,h	3 (1.5-3.5)a,d,g	7 (5-9)d,e,f	7.5 (4-9)g,h,i	<0.001
SOFA (points)	10 (7.5-15)a,b,c,d	4 (2-7)b,e,j	4 (3-7.5)c,g,i	2.5 (1-4)a,f,h	7 (6-11)d,h,i,j	9.5 (6-11)e,f,g	<0.001
ICU days	4 (2-8)d,e,f	1 (1-2.5)c,f	1 (1-2)b,e	1 (1-2)a,d,g	4 (2-7)a,b,c	2 (1-6)g	<0.001
Hospital days	15 (8-26)	26 (13-33)	19 (9-29)	12 (6-27)	16 (12-25)	17 (7-26)	0.063
ICU mortality	36/56 – 64.3%	4/32 – 12.5%	4/23 – 17.4%	0/20 – 0%	28/147 – 19.1%	17/26 – 65.4%	<0.001
Hospital mortality	45/56 – 80.4%	13/32 – 40.6%	5/23 – 21.7%	2/20 – 10%	36/147 – 24.5%	20/26 – 76.9%	<0.001

Results expressed as median (25%-75%) or number (%). The pairs noted with the letters a, b, c, d, e, f, g and h showed statistically significant differences (P<0.05) in the post-hoc test. APACHE II- Acute Physiology and Chronic Heath Evaluation; SAPS – Simplified Acute Physiologic Score; LODS – Logistic Organ Dysfunction Score; MPM – Mortality Prediction Model; MODS – Multiple Organ Dysfunction Score; SOFA – Sequential Organ Failure Assessment; ICU – intensive care unit.

Table 4 – Logistic regression with outcome evolution in the intensive care unit

Variable	Coefficient ± standard error	P value	Odds ration (95% CI)
APACHE II	0.158 ± 0.0372	<0.001	1.171 (1.089 – 1.259)
MBP (mmHg)	-0.0184 ± 0.0069	0.008	0.9872 (0.969 – 0.995)
Mechanic ventilation	2.535 ± 0.449	<0.001	12.612 (5.228 – 30.426)
Acute renal failure	1.505 ± 0.623	0.016	4.506 (1.328 – 15.292)
Constant	-3.8 ± 0.908	<0.001	0.0224 (0.00377 – 0.133)

CI – 95% confidence interval; APACHE II– Acute Physiology and Chronic Heath Evaluation; MBP - mean blood pressure; Mechanic ventilation in the first 24 hours following ICU admission; Acute renal failure = creatinine > 3.4 mg/dL; Hosmer-Lemeshow Goodness-of-fit = 7.376; P=0.497.

Table 5 – Logistic regression with outcome hospital evolution

Variable	Coefficient ± standard error	P value	Odds ratio (95% CI)
APACHE II (points)	0.0753 ± 0.0299	0.012	1.078 (1.017 – 1.143)
MBP (mmHg)	-0.0147 ± 0.00598	0.014	0.985 (0.974 – 0.997)
Mechanic ventilation	1.406 ± 0.366	<0.001	4.080 (1.990 – 8.364)
Acute renal failure	1.706 ± 0.597	0.004	5.509 (1.708 – 17.766)
Confirmed infection	2.067 ± 0.527	<0.001	7.899 (2.814 – 22.175)
Constant	-1.549 ± 0.703	0.028	0.213 (0.0536 – 0.843)

CI – 95% confidence interval; APACHE II – Acute Physiology and Chronic Heath Evaluation; MBP - mean blood pressure; Mechanic ventilation in the first 24 hours following ICU admission; Acute renal failure = creatinine > 3.4 mg/dL; infection confirmed within the first 24 hours following ICU admission; Hosmer-Lemeshow Goodness-of-fit = 7.376; P=0.497.

DISCUSSION

In this largest Brazilian cirrhosis patients outcomes study, we showed that liver cirrhosis patients had increased mortality, with worse outcomes compared to other ICU admitted patients. Patients undergoing elective surgeries had better outcomes, while the non-surgical and urgent surgery patients had worse outcomes. Thus, the stratification by type of admission (non-surgical, elective surgery and urgent surgery) provides very different mortality rates.

Studies in cirrhotic patients admitted to intensive care units in the last century eighties report poor prognosis, with between 63 and 89% mortality,[1,6] and in case of sepsis, reaching 100%.[1,7] Other authors compared the outcomes of patients admitted in different years, identifying reduced hospital mortality in the more recent years (1989 to 1992 = 82% and 2001 to 2004 = 52%).[8] In more recent studies (from this decade), the mortality remains high, ranging between 54.7 and 73.6%.[9,10-12] In contrast with these figures, a Cleveland Clinic Foundation's study in patients admitted between 1993 and 1998 reports lower mortality: ICU 36% and hospital 49%.[13] When the mortality was evaluated for a longer period, it was also shown to be high: one year cirrhotic patients mortality 69%, and five years 77%.[14] In this study, although the overall ICU and hospital mortality are in average 10% higher (ICU 29.3% versus 19.6%; hospital 39.8% versus 28.3%), it was not as high as the previously mentioned studies, as we included elective surgeries. These subjects underwent surgical procedures because, although having liver cirrhosis, had an at least acceptable surgical risk. If only non-surgical patients are considered, the ICU and hospital mortality was very high, 64.3 and 80.4%, respectively. These values were closer to those found for patients admitted following urgent surgery.

Cirrhotic patients with organs and systems dysfunctions showed increased mortality, increasing as the number of dysfunctions,[8] reaching 90% in patients with three or more dysfunctions. The currently most used score for multiple organ dysfunction evaluation is the SOFA.[15] This score was originally aimed to evaluate morbidity, not prognosis. However, its simplicity lead SOFA to be sequentially used in several trials [16-18] and its sequential use proved optimal accuracy for predicting mortality in several scenarios, including cirrhotic patients.[9] For comparisons with other prognosis scores, we used three organ dysfunction scores (SOFA, LODS and MODS) scored only in the first 24 hours following ICU admission (Table 3).

The mortality is very increased in patients with renal failure, ranging between 65.7 and 89%.[14,19,20,21] In this study's logistic regression we found that the retained variables were acute renal (ARF), respiratory (mechanic ventilation) and cardiovascular (MBP) failures. Acute renal failure patients had 4.5 and 5.5 times increased death risk in ICU and hospital, respectively. Using multivariate analysis, a study has shown similar odds ratio (4.1 times).[22] Overall ARF prevalence was 15.8%, reaching 44.6% in non-surgical patients, similar to a literature report with a 42% incidence.[9]

Respiratory dysfunction prevalence is variable, ranging between 21.8% and 89% for critically ill cirrhotic patients studies.[6,8,9] In this study the overall prevalence was 26.3%, reaching 57.1% in non-surgical patients. Respiratory failure patients also showed increased risk of death both in ICU and hospital, with respectively 12.6 and 4 times increased values. One study reports 84% mortality for respiratory failure cirrhotic patients.[14]

As identified in our study, cirrhotic patients undergoing emergency surgeries showed increased mortality.[23] Another case-control non-liver surgery study identified increased mortality in liver cirrhosis patients (16.3% versus 3.5%).[24] In our patients we identified lower ICU mortality, 12.5%, however the hospital mortality was very higher, 40.6%.

In the Cleveland Clinic Foundation's study[13] logistic regression, the variables associated with ICU mortality were: 1) APACHE III score; 2) mechanic ventilation and 3) vasopressors. Yet, the variables associated with hospital mortality were 1) APACHE III score; 2) vasopressors and 3) acute renal failure. They concluded that simple prognostic models may be used for critically ill cirrhotic patients admitted to ICU. It is remarkable the large similarity with our ICU and hospital mortality models (Tables 4 and 5), where we used the APACHE II instead of APACHE III score, and MBP instead of vasopressors.

Study limitations

This study used a large population of cirrhotic patients from two Rio de Janeiro's public hospitals. The patients' characteristics and hospitals' resources may be different from those found in other Brazilian hospitals. Thus, caution is advised for extrapolating this study data to other institutions. As Child-Turcotte-Pugh or Model for End-Stage Liver Disease (MELD) score collections were not performed for all patients, these were not analyzable. Equally, cirrhotic patients undergoing heart surgery and those with trauma were not studied.

CONCLUSIONS

We conclude that cirrhotic patients had increased mortality in comparison with overall patients admitted to intensive care unit, particularly those admitted following urgent surgery and the non-surgical patients. Nevertheless, it is not futile admitting a cirrhotic patient to the ICU. In those presenting with respiratory failure, acute renal failure, shock and infection, special attention should be paid to monitoring, and the therapy should be very aggressive, aiming to reduce mortality.

RESUMO

Objetivo: Esse estudo objetiva avaliar o prognóstico de pacientes cirróticos admitidos em Unidade de Terapia Intensiva.

Métodos: Realizou-se coorte prospectiva de pacientes cirróticos internados entre junho de 1999 a setembro de 2004 em dois centros de tratamento intensivo. Foram coletadas informações demográficas, comorbidades, diagnósticos, sinais vitais, exames laboratoriais, escores prognósticos e o desfecho no centro de tratamento intensivo (CTI) e no hospital. Os pacientes foram divididos em grupos distintos: não cirúrgicos, cirurgias não hepáticas, cirurgias para hipertensão portal, cirurgias hepáticas, transplante hepático e cirurgias de urgência.

Resultados: Foram estudados 304 pacientes cirróticos, sendo 190 (62,5%) do sexo masculino. A mediana da idade foi de 54 (47-61) anos. A letalidade global no CTI e no hospital foi de 29,3 e 39,8%, respectivamente, mais elevadas do que as observadas nos demais pacientes admitidos no período do estudo (19,6 e 28,3%; p<0,001). Os pacientes não cirúrgicos e os submetidos a cirurgia de urgência apresentaram alta letalidade, tanto no CTI (64,3 e 65,4%) quanto hospitalar (80,4 e 76,9%). Os fatores relacionados à letalidade no hospital foram [razão de chances (intervalo de confiança a 95%)]: pressão arterial média [0,985 (0,974-0,997)]; ventilação mecânica às 24 h de admissão [4,080 (1,990-8,364)]; infecção confirmada às 24 h de admissão [7,899 (2,814-22,175)]; insuficiência renal aguda [5,509 (1,708-17,766)] e escore APACHE II (pontos) [1,078 (1,017-1,143)].

Conclusões: Pacientes cirróticos apresentaram letalidade mais elevada que os demais pacientes admitidos na terapia intensiva, particularmente aqueles admitidos após cirurgias de urgência e os não cirúrgicos.

Descritores: Doenças agudas; Incidência; Unidades de terapia intensiva; Cirrose hepática/complicações; Cirrose hepática/mortalidade; Prognóstico; Resultado de tratamento

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